May 1, 2006 – Gravity

$F_{gravity} = G\frac{m_1 m_2}{r^2}$ (G = 6.67 x 10^{-11})

The above equation tells us that gravity
Increases with mass, and *decreases* with distance.
If you are standing on a planet, r is distance to center of planet.
(r is always distance from center of two objects).

Increases or decreases:
Q: a satellite moves to a farther orbit, gravity: decreases (r increases)
Q: a planet shrinks (you stay on the surface, m is same), gravity: increases.
Q: a planet stops spinning, gravity: stays same. (but you feel heavier).
Q: do two objects on the earth have gravity between them? Yes.
Q: why aren't they attracted toward each other? They are, but the gravity of earth is so much more.

April 17, 2006

Heat – internal energy of atoms. (internal Ek – how much they vibrate)
Temperature – degrees – how hot or cold they are.
Latent heat – can add heat and not raise temp, but change phases.
Depending on substance – temp. may or may not raise fast with more heat.

Heat transfer –
Conduction – touching of two substance. (vibrations from one hit the other)
Convection – moving fluids (liquid, gas); wind, boiling; hotter substance are less dense and rise.
Radiation – heating by electromagnetic radiation (sun, infrared light, fire [from the side] microwaves)

Acids + bases:
Acids – makes H+ ions when dissolved in water.
Range: 0 to 7; 0 is most acidic (HCl – strongest)
Bases – OH- ions when dissolved in water.
Range: 7 to 14; 14 most basic (NaOH – strongest)

You test the pH level of your pool. It has a pH of 8.2. According to the manufacturer the desired pH of a pool should be 7.6. Which of the following do you add?
A) an acid B) a base C) Chlorine D) salt

TransCription vs. TranSlation – (C before S)
Transcription – DNA to mRNA in nucleus (looks the same)
Translation – mRNA to tRNA in ribosomes to make proteins (looks diff)

Taks Information –

Make up of an atom and the particle charges:
protons (+); electrons (-); neutrons (n/a)
Center of atom called: *nucleus*, which contains the *protons and neutrons.*

Electrons are in *orbits* around the *nucleus*.

Normal atoms are what charge? *Neutral*, so #protons = #electrons.
If not neutral – called *ions* (+ or -)

Ions
- Attract each other if *oppositely charged*.
- Combine into *molecules* or *compounds*.
- Ions allow *electricity*.
- Where we find ions –
  - Electrolytes (allow elec to flow) – dissolved ionic compounds (dissolved into their ions; equal + and -)
  - Acids – H + ions created from dissolved compounds
  - Bases – OH- ions (see above)

Mar 23 and 24 – Natural Selection

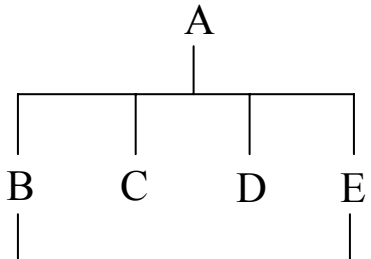
Natural Selection – small (helpful) adaptations within a species create differences which can eventually lead to new species over time.

Adaptations – can genetic or behavioral;
both can be passed to offspring:
- genetic - by mutation of genes (must be in gametes)
- behavioral – parent teaching offspring.

Reproductive Isolation – any condition that prevents individuals from breeding; can lead to changes within isolated populations.
- Geographical – any physical barrier that separates individuals; need corridors to connect populations.
- Temporal – fertility occurs at different times.
- Behavioral – incompatible mating rituals, etc.

Mar 21 and 22 – Genetic Family Trees

Species Family Trees: closer on the tree = closer genetically
- A is genetic ancestor for entire tree.
- B, C, D, E are direct descendents of A
- F and G are direct descendents of B
- B is closely related to C, D, E
- F is closer to B than to C

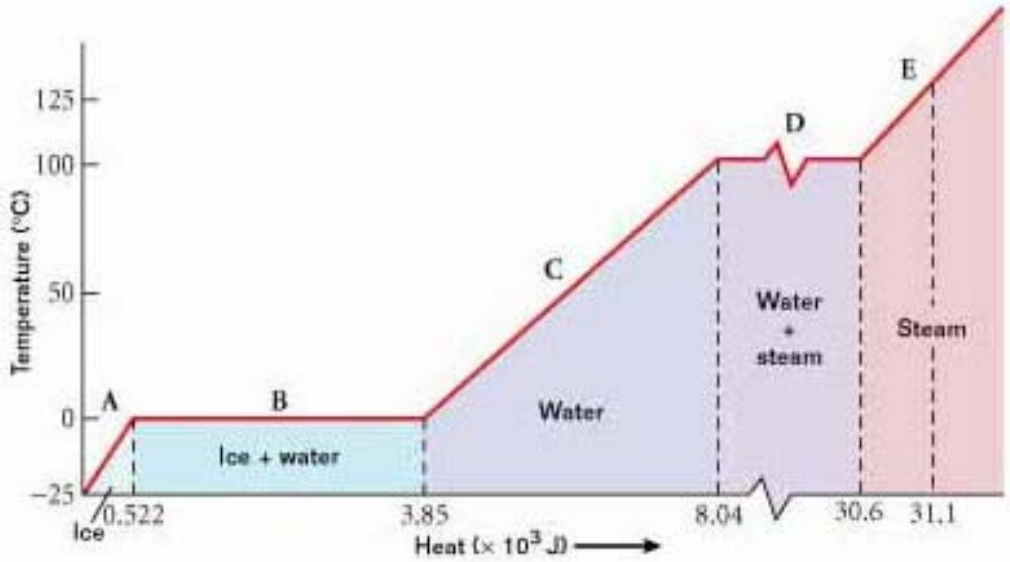


F is closer to C than to H
F is closer to G than to B
F is closer to E than to H
F is closer to D than to A (?)

Feb 22 and 23 – Solubility Graphs (See handout)

Feb 17 and 21 – Heat $Q = mc_p\Delta T$

Heat (Q - in calories) – energy of matter (Thermal Energy)
Temperature (T in ºC) - measures how fast the atoms are vibrating
Something can have low temperature,
but have a lot of heat if it has a lot of mass.
Specific Heat (C_p) – how hard it is to raise a material's temp. (like temp. inertia)
Insulators have high C_p, conductors – low C_p.
Latent Heat – heat necessary to change phase
(from solid to liquid or liquid to gas) – heat in; temp stays same.

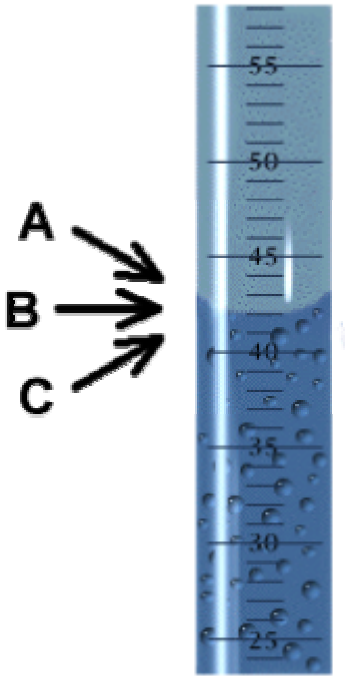


Feb 13 and 14 – Measuring 2

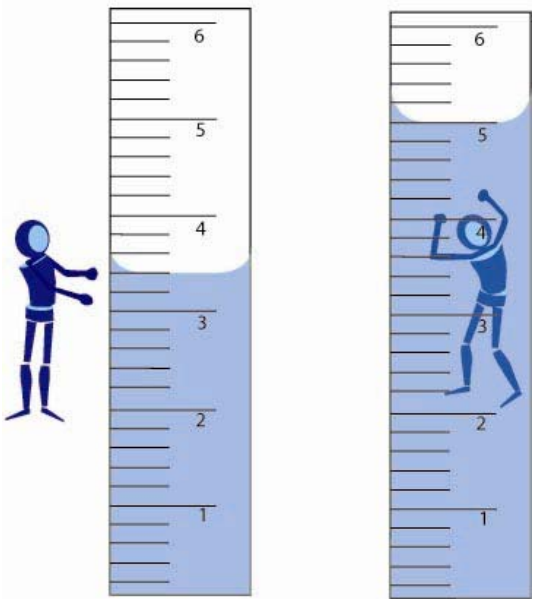
Graduated Cylinders – measures volume; smaller diameter
is more accurate (small Δ volume causes a bigger rise in the cylinder).
Triple Beam Balance – mass not weight
Beakers – tranfer of liquids, or temporary storage
(or less accurate measuring)
Spring Scale – force**.**
Meter Stick – distance; less accurate starting at the end.

Feb 9 and 10 – Measuring 1
Meniscus – water curving against glass.
Water is attraction to glass (electrically). Water is not attracted to plastic.
Read the lowest part of the meniscus at eye level.

What does this cylinder read?



Find the volume of the drowning man.
(We'll save him…eventually…)



Displacement method: putting an **irregular** object in water to find its volume.

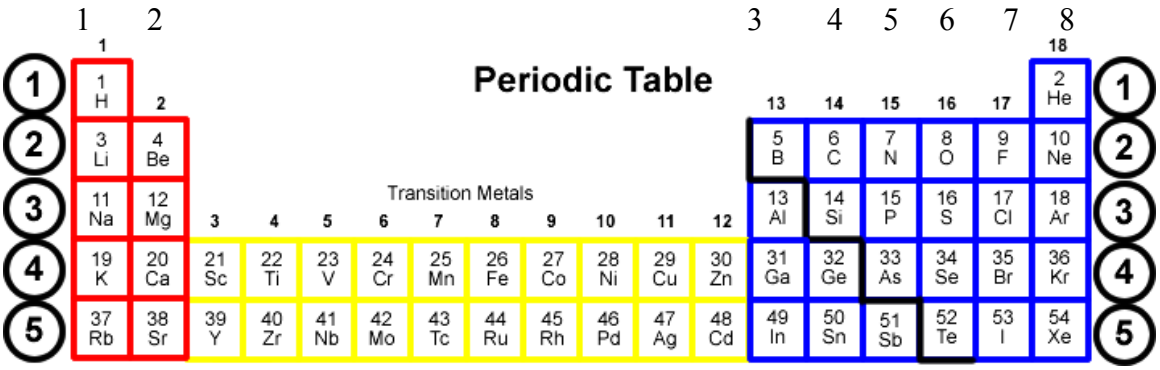
$$V_{final} - V_{initial} = V_{object}$$

Feb 7 and 8 -

When in the presence of other atoms, atoms gain or lose electrons
(which ever is easiest) to have a full shell of valence electrons

(outermost e's; involved in bonding). The noble gases (column 18) have full shells.

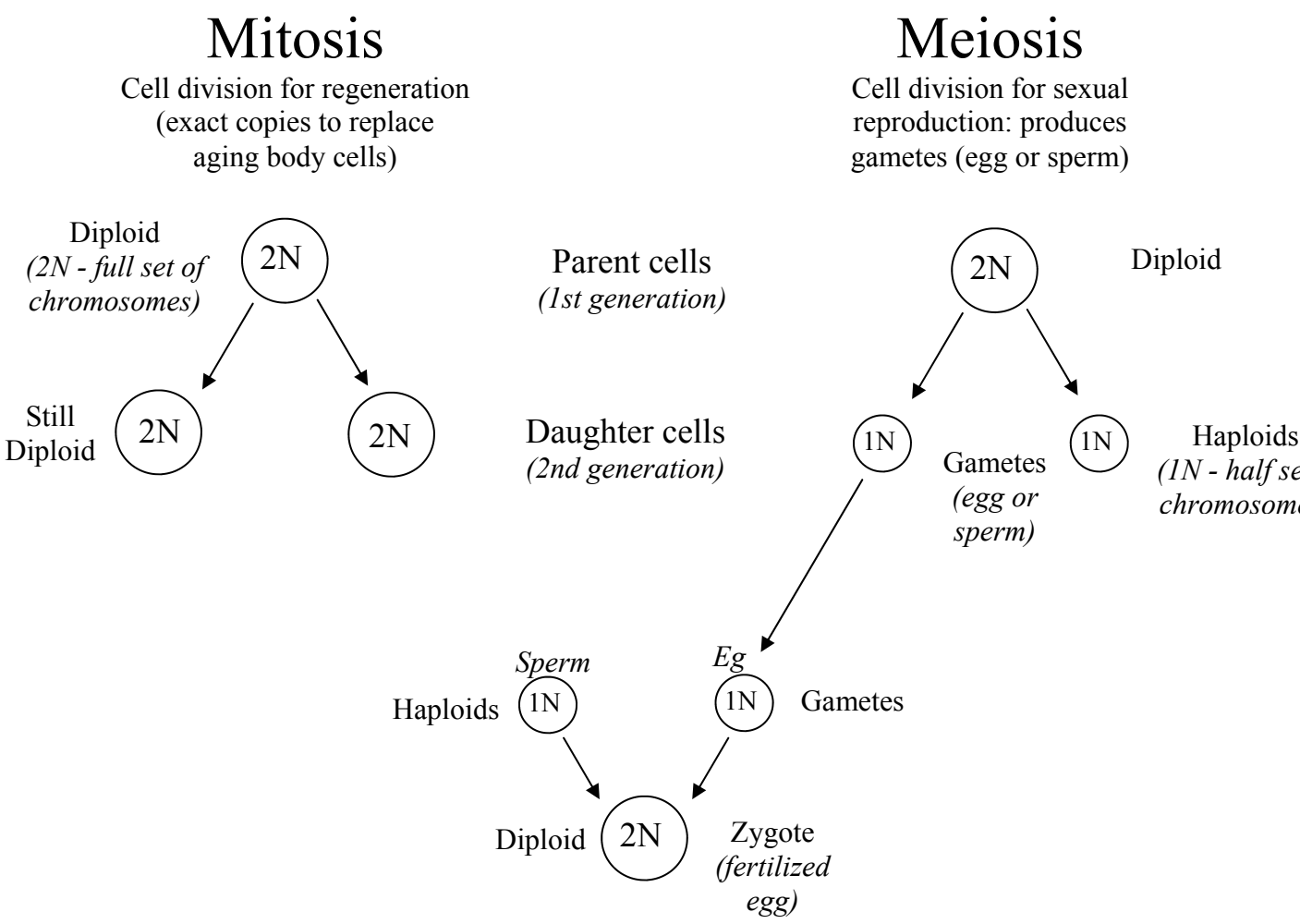
Valence Electrons (in bold):



Metals tend to LOSE electrons and become POSITIVE
Nonmetals tend to GAIN electrons and become NEGATIVE.

Ionic compounds – comprised of METALS and NONMETALS.
Covalent compounds – made of non-metals.

Feb 3 and 6 –



Jan 24 and 25 – DNA Structure

DNA – made up of a deoxyribose sugar (ladder sides)
and nitrogen bases (Ladder steps), which always pair up as: AT or CG.

RNA – ribose sugar instead. AU and CG (uracil not Thymine).

Codon – three base code that tells the ribosome
what amino acid to make.

Jan 20 and 23 – Wave interactions (NOT ON ELECTRICITY TEST)

Absorption - a wave's energy dies out in a soft material (damping).
*Example: Yelling into a pillow. The soft pillow **absorbs** the sound.*

Reflection - a wave bounces off when it hits a hard boundary.
*Example: When you yell against a wall, the sound wave **reflects** off of the wall.*

Diffraction - part of a wave bends around a corner. This is partially how we hear around corners and how some light can be seen around corners. The corner drags on the wave slowing it and turning it.
Example: talking to someone around a corner.

Refraction - a wave slows and bends when entering a transparent boundary.
Example: Light going into water bends toward the water.
Light also bends going through the lenses of eyeglasses to magnify objects.

Jan 18 and 19 – Solubility Factors

These will increase (+ speed up) solubility of substances into solution:
1. Temperature – higher temp usually = more solute dissolved
2. Pressure – more gas absorbed under pressure (Soft drinks)
3. Stirring, mixing, breaking up of the solute (crushing)
4. Which solute it is – some substances just dissolve faster and more completely.

Electrolytic behavior demo.

Jan 13 and 17 - Electrolytes

Ion – a nonneutral, charged atom.
Positive ions are _____ (metals or nonmetals?)
Negative ions are _____ (metal or nonmetal?)

Acids make H^+ ions in water. Acidic solutions have (+ or -) ions.

Bases make OH^- ions in water. Basic solutions have (+ or -) ions.

Ionic compounds (made up of metal and nonmetal)
dissolve (dissociate) in water, making + and – free ions in the water.
+ or - ions (called electrolytes) have a charge – so electricity can move.

Lightening ionizes air to get to ground (by force).
Acid, Basic, or salty water becomes electrolytic and allows electricity to move.
(Ever hear of battery acid?)

Bellwork Jan 11 and 12

H_2O = water

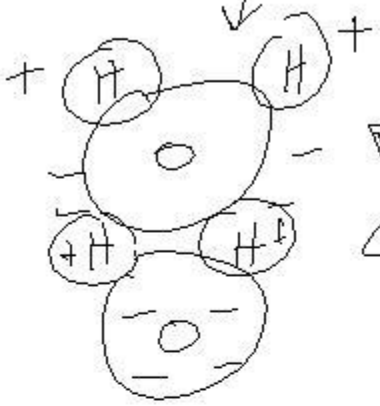
Why Water is a "Polar" molecule

water look like Mickey Mouse

H - 1 proton

O - 8 proton

So oxygen attracts the electrons from the H's.



water chain (more H_2O molecules attach)

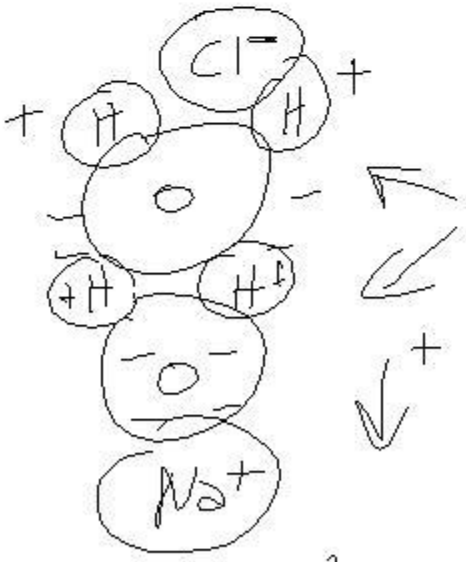
This is why H_2O is polar - it has a neg. + pos. side. (+why H_2O molecules attrad each other)

These bonds are called "Hydrogen bonds": allow water chains; water tension; and capillary action in plants (sucking up water from roots)

Ionic compounds - made up of metals and nonmetals. Metals lose e's; nonmetals gain.

SO metals are positive nonmetals are negative

Metals are attracted to O
Nonmetals to H



$NaCl$ ← table salt

Na^+ Cl^-

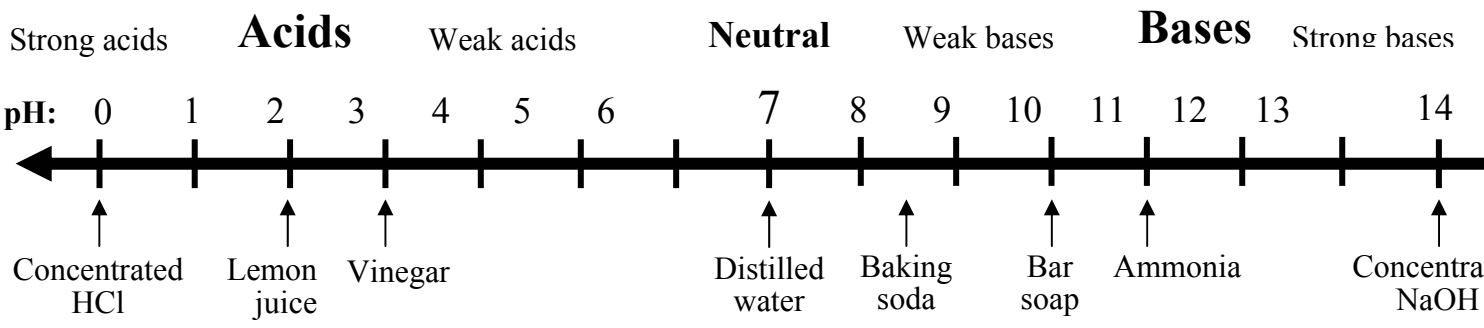
This is why ionic compounds dissolve in H_2

1/9 and 1/10 – DNA Basics (Protein Synthesis) - *On Web*

Nucleus:	cell organelle in which DNA is stored
DNA:	double helix molecule that stores an organism's genetic code
mRNA	molecule that carries the genetic code from the nucleus to the ribosomes
tRNA	molecule that turns the genetic code into the correct amino acid sequence in the ribosomes.
Transcription:	process in which DNA is copied into mRNA.
Translation:	process in which proteins are made from tRNA.
Ribosomes:	cell organelle in which proteins are created
Amino Acids:	building blocks of proteins

1/5 and 1/6 – Acids and Bases

Acids	**Neutral**	**Bases**
Compounds that make H+ ions in water Have less OH– ions. pH 0 to 7 Feel "squeaky clean" Taste sour Strong acids can burn. Always pour acids into water (A&W).	pH 7 Distilled water OR salt water (mixed = acid and base). Has = # of H+ and OH– ions.	Compounds that make OH- ions in water Have less H+ ions pH 7 to 14 Feel "slippery" Taste bitter Strong bases can burn.



1/3+ and 1/4 – Basic Chemistry Review

Protons are +; located in nucleus; # of protons is atomic # and tells the element; change # of protons: change element; removed only by nuclear reactions; bound by the strong nuclear force, so they can't move;

Electrons are neg.; located in orbitals around nucleus; very small;
involved in chemical reactions; Change # of electrons: change ion; can move.
Neutrons are neutral; located in nucleus; glue to hold nucleus together.

Neutral atom: # protons = # electrons. Ion: # protons ≠ # electrons

Opposites attract; like charges repel; neutral attracts nothing.

Web Practice: Ionic Notation page top 4
What charge do they have?
3 protons = ___; 4 electrons = ____. 7 electrons and 6 protons and 6 neutrons = ____

Attract (A) or Repel (R)?
2 electrons: ____; 2 protons ____; an electron and a proton ____;
an electron and a neutron ____

12/6 and 12/7 – Review for Final

Convert: 12 mph to m/s:
3.3 ft = 1 m; 5,280 ft = 1 mile

If a 4 kg object is originally going 3 m/s, experiencing a 2 m/s^2 acceleration.
Find how far the object went in 6 seconds.

12/1 and 12/5 – Taxonomy (Classification of Species)

Kingdom, Phylum, Class, Order, Family, Genus, Species
Most general — Most specific.
Less related — More related

The farther to the right that the words are the same, the closer the species are:
Roses and Humans - different *Kingdoms*
Worms and Humans - different *Phylums*
Eagles and Humans – different *Classes*
Horses and Humans – different *Order*
Monkeys and Humans – different *Family*
Neanderthals and Humans – different *Species* (but very closely related)

Scientific name: two parts; genus and species: Human (*Homo sapiens*)

Which Badgers are most closely related?
1. North American Badgers – *Taxidea taxus*
2. Palawan Badger – *Mydaus marchei*
3. Eurasian Badgers – *Meles meles*
4. Javan Stink Badger – *Mydaus javanensis*

11/28 and 11/29 – Experimental Variables/ Phloem vs Xylem

Experimental variable – the one you change to see how it works;
good experiments have only 1 of these.
Control variables – those that you control and don't change
(all vars other than the exper var)
Control setup – a neutral setup without the experimental
variable (if possible); it tells you if the exper var. affects
things at all (if it works the same with and without, the
exp var is not a factor).

Q – Does salt affect the boiling point of water?
Exp var - salt
Control vars – pot, amount of water, type of water (pure vs tap), heat source, etc.
Control setup – a pot of water with no salt (without the exp var)

Phloem (flow'em) – just under bark – carries nutrients
(Phloem carries food).
Xylem – just under the phloem – carries water; old xylem makes
up the wood of the tree trunk.

11/21 and 11/22 – Role of Bacteria and Adaptations of Plants

Bacteria …(yes)
…cause diseases such as streptococcus and diphtheria
…adapt, so overuse of antibacterials are bad
…are necessary for good health, especially in digestion
…"too clean" can kill good bacteria, too.

Plant adaptations – (actual list is endless) (no)
Cacti – no leaves, chlorophyll in truck; do calvin cycle at night; thorns
Seeds – protect offspring until suitable conditions for germination;
have food inside and hard shell outside
Seed Dispersal – floating seeds, cork screw seeds, fruit, etc.
Conifers (pines) – intake water through needles; waxy coating.

11/17 and 11/18 - Test

11/15 and 11/16 – Characteristics of Life

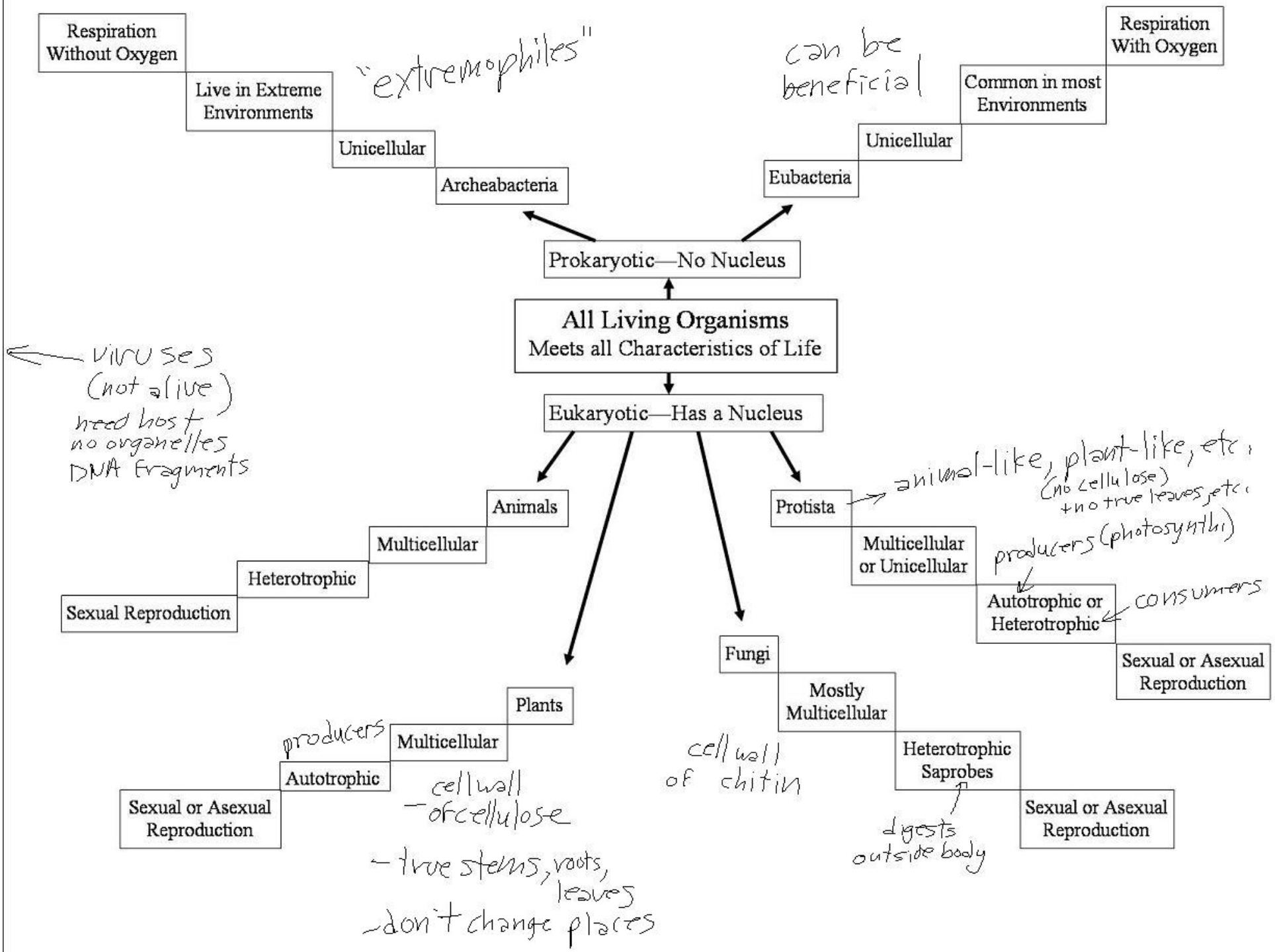
1. Made of cells – (multicellular have organization, like tissues)
2. Metabolism – uses and obtains energy
3. Maintain homeostasis – responds to stimulus (like avoiding danger)
4. Reproduces (sexually or asexually)
5. Passes on a genetic code

All of these must be fulfilled for an organism to be considered alive.

Which of the above are active processes?
(All, except “made of cells” #1, which is just structural)

A virus shares which of the above characteristics? – #5
(Through the host cell)
A virus does not share which of the above? (all the others: 1, 2, 3, 4)

11/13 and 11/14 – 6 Kingdom Charts (Next page)


All Living Organisms
Meets all Characteristics of Life
Prokaryotic—No Nucleus
Respiration Without Oxygen
Live in Extreme Environments
Unicellular
Archeabacteria
"extremophiles"
Respiration With Oxygen
Common in most Environments
Unicellular
Eubacteria
can be beneficial
Eukaryotic—Has a Nucleus
Animals
Multicellular
Heterotrophic
Sexual Reproduction
Protista
Multicellular or Unicellular
animal-like, plant-like, etc.
(no cellulose)
+no true leaves, etc.
Autotrophic or Heterotrophic
producers (photosynth.)
consumers
Sexual or Asexual Reproduction
Plants
Multicellular
Autotrophic
Sexual or Asexual Reproduction
producers
cell wall
-or cellulose
-true stems, roots, leaves
-don't change places
Fungi
Mostly Multicellular
Heterotrophic Saprobes
Sexual or Asexual Reproduction
cell wall of chitin
digests outside body
VIRUSES
(not alive)
need host
no organelles
DNA fragments

11/9 and 11/10 Cellular Processes

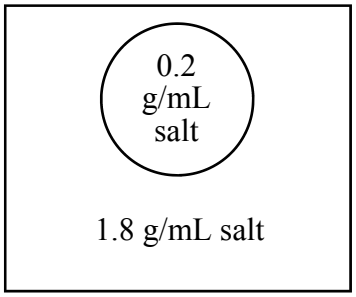
Osmosis – moving of water from high water concentration to low water concentration across a selectively permeable membrane which allows some substances to move; some not.

Diffusion – moving of nonwater molecules from high to low molecule concentration in the air or through a selectively permeable membrane.

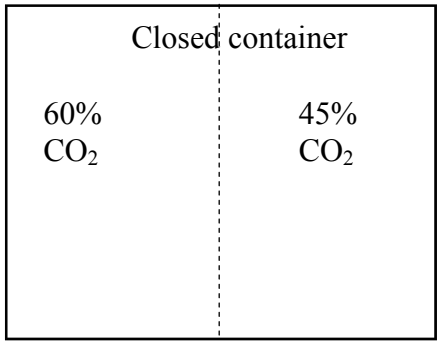
Think of it this way:

If water is moving it's ALWAYS osmosis.
If solute (nonwater) can move, it moves by _____ from high to low concentration (they are crowded so they move away from each other).
If solute can't move (due to membrane) then water moves by _____ from high to low water concentration. (The saltier region needs more water; water dilutes the salt.)

Will water go into or out of the circular membrane and why?



In the closed container what will happen to the carbon dioxide and why?



Is this respiration or photosynthesis?

$CO_2 + H_2O + \text{energy} \rightarrow C_6H_{12}O_6 + O_2$

11/7 and 11/8 –

Major cell organelles –

Mitochondria – makes energy (ATP in animal cells)
Chloroplast – uses chlorophyll to make energy (plants only)
Nucleus – stores genetic code (remove this – remove all genes)
Ribosomes – makes proteins
Cell Membrane – protects cell

Homeostasis – conditions favorable for a cell to thrive.
A kind of "equilibrium"

Photosynthesis – plants using sun to make energy (glucose - sugar)
Respiration - animals taking in oxygen, burning glucose gives off CO_2

$C_6H_{12}O_6 + O_2 \rightarrow CO_2 + H_2O + \text{energy}$

$CO_2 + H_2O + \text{energy} \rightarrow C_6H_{12}O_6 + O_2$

Which is this?

10/27 and 10/28 – More Chemistry basics – do full vies (View/Full screen)
(answers in "bellworkkey.doc" in "My Documents")

Change # of protons – change element
Change # of neutrons – change isotope
Change # of electrons – change ion.

Magnesium has ____ protons (see periodic table).
Add a proton and magnesium would become: _____

Carbon has _____ protons; add a neutron and what element is it? _____

Chlorine has _____ protons. When it is neutral it has ____ electrons.
Chlorine tend to gains an electron (that's why its oxidation # is _____) and
becomes an _____.

Ionic compounds form when ions of opposite charge are attracted to each other.

Write the balanced ionic compound made when beryllium and chloride combine:
1. Find the oxidation #s for each.
2. Make a balance compound so that the same # of electrons are given and received.

10/26 and 10/31 – Physical vs. Chemical Changes
Physical Change – retains chemical composition, but changes appearance, size, shape, phase (from liquid to gas or solid).
Types of physical changes:
melting; boiling; breaking; cutting; ripping; dissolving.
Chemical Change – chemical composition is different;
Evidence of chemical change:
Bubbles – evidence that a new gas is formed
(but soda pop fizzling is a physical change, though. Why?).
Turns cloudy – evidence that a new solid is forming (called a precipitate).
Temperature changes – evidence that chemical bonds are breaking or forming.
Gets hot: called _____; Gets cold: called _____)
Color changes – evidence that a new substance is forming.
Change in smell or taste– evidence a new substance formed.
Vapors can be dangerous, so how do we smell new substances?

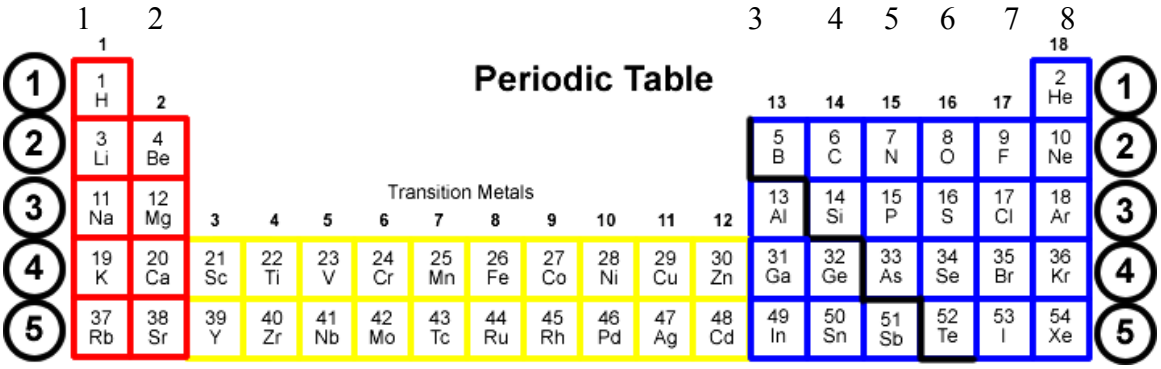
Discern if Physical or Chemical:
Ask yourself – after this change is it still the same substance?

Physical or Chemical Change?
Salt disappearing in water (salt _____ in water forming a _____):
Iron Rusting (called: _____)
Digesting food:
Water cracking and breaking up rocks into soil: _____
Igneous rock forming:
Metamorphic rock forming:
Water evaporating

10/24 and 10/25 – Chemical Behavior and the Periodic Table

Metals – on left side of periodic table; **Nonmetals** – on right side

Ionic bond – between metals and non-metals; **Covalent bonds** – between non-metals
Valence Electrons (VE's) – outermost; involved in bonding;
(Helium is exception - has 2, not 8)
Same # of V.E's – similar reactivity; in the same column.
Elements at edges of table are more reactants (VE = 1 and 7 are most)



10/20 and 10/21 – Law of Conservation of Mass

Law of conservation of mass – in a closed reaction the mass is never gained nor lost. (Mass of the reactants must equal the mass of the products.)

A Closed reaction – nothing can escape (closed containers, for ex.)
Open Reaction – product can escape (or reactants can come in)
Reactants (what is mixed) **Products** (what you make)

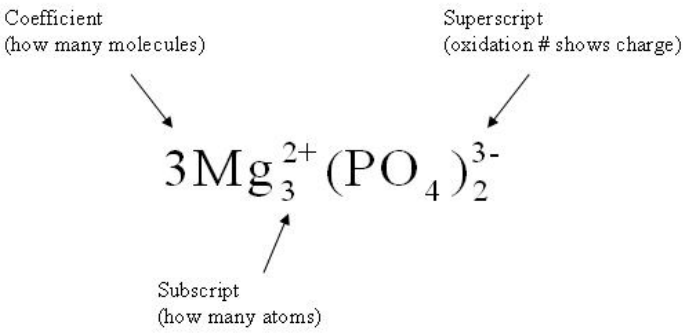
reactants products

$$\_\_Mg_2N_3 + \_\_H_2O \longrightarrow \_\_H_2 + \_\_MgO + \_\_N_2$$

$$\_\_Mg_2N_3 + \_\_H_2O \longrightarrow \_\_H_2 + \_\_MgO + \_\_N_2$$

10/18 and 10/19 – Chemical symbols (and more buoyant force)

If a person feels like they weigh 600 N in water and they actually weigh 1200 N, the water gives a buoyant force of _____.



10/14 and 10/17 – Solutions

Solution – a mixture at the molecular level (is not a chemical change).
Dissolve – when an object goes into solution (seems to disappear).
When something dissolves its ions break apart.
Stirring, temperature, breaking up – affect dissolving rate.
Solute – the part of the solution in smaller quantity.
Solvent – the part of the solution in large quantity.
Notice that "solute" is smaller than "solvent" – smaller word: smaller amount.
Soluble – will dissolve; insoluble – won't dissolve;
Saturated - full; supersaturated - over full - unsaturated: not full.

Salt water: The solute is _____; the solvent is _____.
A solution of 30% water and a 70% – the solvent is _____

10/12 and 10/13 – Properties of Fluids

Density – how compact an object is. D = m/v. (*website*)
Light objects don't float (less dense ones do). Denser objects sink.
Same substance: colder sinks (solids), hotter rises (gases). (Except for?)
Water has a density of _____.
Viscosity – how slowly a fluid pours.
Buoyancy – how much force a fluid pushes up on an object.

Quiz:
1. Which is more dense: rock or Styrofoam?
2. Which is more viscous: water or pancake syrup?
3. Which gives more buoyancy: molasses or milk?
(which would you float easier in?)

10/6 and 10/11 – Benchmark test – no bellwork

10/4 and 10/5 – Chapter 3 Test – no bellwork

9/30 and 10/3 – rock types and plate tectonics

Three types of rocks

Rock Type	Way to remember	How formed	Type of Change	Examples
Igneous	*Ignite (fire)*	High heat (melting) cools on surface	physical	lava
Metamorphic	*Morphing (changed)*	high heat and pressure	chemical	granite
Sedimentary	*Sediment*	loose particles pressed together over time	physical	sandstone

Fossils are always trapped in sedimentary rock (fossils undergo a chemical change).
Plate Tectonics – continents drift over the earth's molten core over millennium
(causes earthquakes and volcanoes)

9/28 and 9/29 – Newton's Three Laws of Motion (S*tudy help available*)

Simplified -
Law 1 – *"Law of Inertia"* – Takes a force to move, turn, speed up, or slow down an object.
Law 2 – "*F = ma*" – More force = more acceleration; more mass = less acceleration.
Law 3 – "*Equal and Opposite Forces*" – Forces always act in pairs. I push on the wall: it pushes back.

Which law?
____ To move forward in a canoe I push backwards with the paddle.
____ Turning a corner requires a force.
____ A heavier car requires a more powerful engine to move it.

9/26 and 9/27 – Viruses

Virus – Surrounded by hard protein coat with DNA or RNA
fragments inside (no genes). No organelles; needs a host to reproduce.
Causes AIDS, colds, warts, and other diseases.
Bacteria – have cell membrane, actual DNA, ribosomes,
but no organelles.
Antibiotics (and antibacterial) – breaks up cell membrane.
Can destroy cells with cell membranes.

9/22 and 9/23 – Body systems 2 (*on web – Biology/ Ecology*)

Circulatory system – moves water, oxygen, and nutrients around the organism;
Can be open or closed: which are we? _____;
example of other type: _____
Immune System – protects from and fights infections
Respiratory System – used to change CO_2 and O_2 between blood and air.
Digestive System – breaks down food to be absorbed by body.
Integumentary System (the ____) – protects from external environment; maintains
temperature; sensory perception (secondary function).
Endocrine System – secretes hormones to regulate body functions.

9/20 and 9/21 – Body systems 1 (*on web – Biology/ Ecology*)

Skeletal system – supports body, place for muscle attachment, protects organs
Nervous system – interprets and sends information throughout the organism.
Excretory/ Urinary system – used to remove waste products from organism.
Muscular system – used for locomotion, support, and protection
Reproductive System – produces egg and sperm to propagate species.

9/16 and 9/19 – Making balanced ionic compounds

1. Metals tend to lose electrons and become *positive.*
2. Non-metals tend to gain electrons and become *negative*.
3. The TAKS test will give you this form: $Be^{2+}Cl^{1-}$.
   What do we call these number? *Oxidation.*
4. Ionic compounds form such that the number of
   electrons gained and lost are equal.

Make balanced ionic compounds from:
A) $Be^{2+}Cl^{1-}$ B) $Al^{3+}Cl^{1-}$ C) $Mg^{2+}N^{3-}$
A) $BeCl_2$ B) $AlCl_3$ C) Mg_3N_2

9/14 and 9/15 – Thermodynamics Basics

1. Heat transfers from hot to cold (ice does not make something cold).
2. Heat doesn't rise (French fries keep warm *underneath* a heat lamp).
3. As fluids (liquids and gases) heat up, they become less dense and rise.
4. There is no convection in solids because: _____ (solids can't move).

9/12 and 9/13 – Thermal Transfer (***see website***)

Conduction – heat of touch; direct contact of two objects
Convection – heat transferred by fluids (gases or liquids);
currents move because less dense fluids rise.
Radiation – heat transferred through radiation (heat of light);
no touching involved. (school appropriate heat transfer)

When water boils in a pot this is _____. (*convection*)
When you put your hand close to the side of the pot you feel heat by _____. (*radiation*)
The pot touching the stove is _____. (*conduction*)

9/8 and 9/9 – Test – Chap 1 and 2 – no bellwork

9/6 and 9/7 – Food Chains and the Food Web

Food Chain – a chain of organisms that shows who-eats-who.
Food Web – a group of interwoven Food Chains for a particular biome.

Make a food chain from producer to 3rd level consumer of the following organisms: grass; hawk; robin; human; fox; leaf; mushroom; mouse; snake; turtle; caterpillar.

9/1 and 9/2
Terrestrial Biomes 2:

1. Tundra – northern most latitudes, ground stays frozen all year; very slow growth rate. (*though they are thawing due to global warming – northern Alaska*).
2. Tropical forest – found mostly around the equator, steady amounts of rain all year; large biodiversity (number of species); plants have rapid growth rate. (*NW Washington State has a rain forest*).
3. Desert – dry or arid areas; very little rainfall. Very slow growth rate. Rains come during specific seasons, found around 30 degrees latitude (north and south).

8/30 and 8/31

Terrestrial Biomes 1:

4. Grasslands – large open areas without trees or shrubs; supports large amount of grazing animals; absorbs large amounts of greenhouse gases. (*Great plains of the US*).
5. Coniferous forest – composed of conifer trees (evergreens – pines), found at higher latitudes or higher elevations; create oxygen (*much of the western US*).
6. Temperate broadleaf – composed of deciduous trees that lose their leaves (oaks, maples, etc), found around mid-latitudes (*Eastern US*).

8/26 and 8/29
Aquatic Biomes (ecosystems)

1. Wetlands – areas that are covered with water long enough to support aquatic plants can dry out for prolonged periods of time; (wetland flora are primary purifiers of our water).
2. Estuaries – area where fresh and salt water mixes.
3. Coral reef – found in tropical waters, composed of coral and the fish that live on or near it (many fish lay eggs here; filters the ocean?).
4. Marine – composed of salt water; has different depth levels. (affects climate; water supply)

8/24 and 8/25

If 8 plops = 2.3 frips and 12 frips = 3 nuyts

Convert 4 plops per hour to nuyts per second

$$\frac{4 \text{ plops}}{1 \text{ hr}}\left(\frac{2.3 \text{ frips}}{8 \text{ plops}}\right)\left(\frac{3 \text{ nuyts}}{12 \text{ frips}}\right)\left(\frac{1 \text{ hr}}{60 \text{ min}}\right)\left(\frac{1 \text{ min}}{60 \text{ sec}}\right) =$$

$$\frac{(4 \text{ x } 2.3 \text{ x } 3) \text{ nuyts}}{(8 \text{ x } 12 \text{ x } 60^2) \text{ sec}}$$

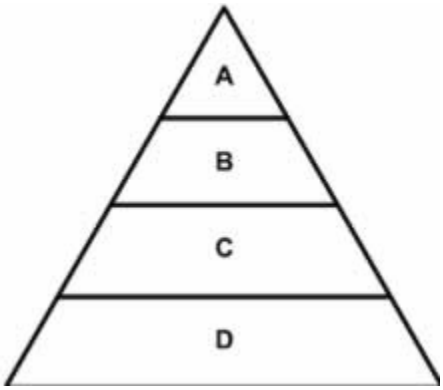
8/22 and 8/23

Biotic factors – living organisms within an environment.
Abiotic factors – nonliving factors within an environment

Are the following biotic or abiotic?

1.___ rocks & soil
2.___ reptiles
3.___ temperature
4.___ water
5.___ grass
6.___ insects
7.___ mammals
8.___ wind
9.___ bacteria
10. ___ sunlight

8/18 and 8/19



Don't write this: This biomass pyramid demonstrates the distribution of organisms in a given ecosystem. Larger levels contain more biomass (amount of living organisms by mass). This diagram can be labeled in several ways.

Label these along side the biomass pyramid:

On left side:
3rd level consumer A
2nd level consumer B
1st level consumer C
Producer D

On right side 2:
Carnivore of carnivore A
Carnivore B
Herbivore C
Plant D

8/16/2005 and 8/17/2005

Vocab:
Herbivore – eats herbs - plants: a cow, gazelle, etc.
Carnivore – carne – meat; meat eaters; lions, tigers
Omnivore – eats plants and meat: bears, raccoons.
Producer – produces food for the world - plants
Consumer – eats producers – animals
Decomposer – recyclers of the ecosystem; eat dead organisms: mushrooms, fungi.

8/15/2005

Types of Symbiosis
Predation: One eats the other (predator eats prey); prey does not need to die.
Parasitism: One eats the other gradually, but hopes it doesn't die. (It wants to keep eating.)
Mutualism: Both are benefited.
Commensalism: One benefits, the other is neither helped nor harmed.

1) A mosquito sucking blood from a human: _____
2) A cowbird eating the tics off of a cow. The cow is benefited because the tic is removed: _____
3) A fox benefits by living under a tree (protection from elements and other predators). The tree could care less: _____.
4) A lion eats a gazelle: _____.